AN IMPROVED METHOD FOR PRESERVING COLOR PATTERNS IN PINNED INSECTS[1]

Stephen B. Berté[2]

ABSTRACT: A method for drying pinned insects is described which preserves their color patterns better than the standard air-drying technique. The process, which involves the use of acetone, offers an added advantage in that specimens can be dried and ready for labeling and storage 48 hours after being collected.

While identifying adult dytiscid beetles, I found that taxonomically important markings of many specimens often became obscured when the animals were air-dried. In an effort to circumvent this problem, I employed a method of preservation which I had been using for adult Odonata which involves the immersion of specimens in acetone followed by a brief period of air-drying.

The use of acetone for preserving odonate color patterns was employed by European workers as early as the 1950's (Robert 1959). More recently, White & Morse (1973) described a technique involving the placement of specimens in paper envelopes and immersing these in an acetone bath for 24 hours. After this period, the specimens are removed from the bath, air-dried for 24 hours, and stored in cellophane envelopes.

To process pinned specimens, freshly killed animals are pinned in the usual way and submerged in acetone. After 24 hours they are removed from the bath, pinned in a block to air-dry and then labeled and stored in the usual manner. Fresh acetone may cause processed specimens to be too brittle; this problem can be alleviated by diluting the acetone with water. After some use the acetone becomes diluted with water and dissolved lipids and is no longer effective as evidenced by processed specimens which are too pliable and/or whose colors and color patterns are not preserved as well as they could be. The number of times that a quantity of acetone can be used depends upon both the size and number of insects which have been treated. A word of caution: as acetone is highly flammable and its vapors can be harmful, care should be exercised in its use and all work should be done in a well ventilated area.

The degree to which the preservation of colors and color patterns is enhanced by this method varies from one species to the next, but in no case have I observed specimens to look worse after the treatment as compared

[1]Received February 28, 1979

[2]Department of Biology, University of Calgary, Calgary, Alberta, Canada T2N 1N4.

to the standard air-drying technique. In the Odonata colors are generally well preserved but the eyes react differently to the treatment, some remaining apparently unchanged while others turn white (even between specimens of a given species). In most dytiscid adults, color patterns are enhanced, thus aiding in the recognition of key characters, but in notonectids and corixids the effect is not as marked. On the other hand, the colors and patterns of acridid grasshoppers are extremely well preserved.

As White & Morse point out, the method is probably successful for three reasons, the first of which is that the destruction of specimens due to bacterial growth is prevented. Secondly, acetone dehydrates the specimen, thereby reducing the time necessary for drying. Finally, because lipids act as barriers to the evaporation of water, their removal by the technique also facilitates rapid drying.

The acetone method of preserving insect specimens is superior to the standard air-drying process in that colors and patterns are, at the least, unaltered as compared to the old method and usually are markedly better preserved. In addition, specimens can be dried and ready for labeling and storage 48 hours after they have been collected. If at a later date it becomes necessary to extract the genitalia from specimens, the pinned insects can be immersed in boiling water for a minute of two. This renders the insects sufficiently pliable to make the necessary dissections possible without destroying the specimens.

ACKNOWLEDGEMENTS

I would like to thank Dr. G. Pritchard and the Izaak Walton Killam Foundation for support.

LITERATURE CITED

Robert, P.A. 1959. Die Libellen (Odonaten). Kummerly & Frey, Geographischer Verlas, Bern. 404 pp.

White, H.B. & W.J. Morse. 1973. Odonata (dragonflies) of New Hampshire: an annotated list. Res. Rep. New Hampshire Agric. Exp. Stn. 30: iii-46 pp.